

## GeoExchange system Harris Companies' Rx in down economy

The overwhelming topic of discussion in this year's Top 100 was the economy. Of the respondents to the Top 100 survey, similar stories were of reduced backlog, decreased profit margins, increased competition for bids, and for some, layoffs were inevitable.

In the midst of this seemingly bottomless recession, plummeting stock

original to the facility and was installed in 1972 (Torrey Arena), the other was part of the 1997 addition (Ritsche Arena). The 1972 arena was in poor condition, needed repair and was not operating efficiently. In addition, the original arena floor was built using galvanized piping that circulated brine through the floor causing severe degradation in heat transfer



Contractors prepare for the GeoExchange well-field installation, adjacent to the MAC.

markets, stimulus packages and consumer confidence likened to the fat kid at the high school dance, some residential/commercial contractors were transformed into service and repair. In spite of all the negativity, *Phc News* highlights a geothermal success story of St. Paul, Minn.-based Harris Companies — No. 17 on the 2009 Top 100 Listing. (See listing on page 46.)

In a time of tight budgets and soaring energy costs, the St. Cloud Municipal Athletic Center (MAC) has found a way to go "green" and save taxpayer dollars in the process. With the installation of a new GeoExchange system, the MAC uses the earth to maintain the arena ice and heat their facility. By installing this sustainable technology, the MAC will save enough electricity to power over 30 homes, enough gas to heat over 80 homes and reduce greenhouse gas emissions by an amount equal to the removal of more than 100 cars from the road each year.

This project originated after the 2007 Fall Minnesota Ice Arena Manager's Association (MIAMA) meeting where Harris Companies presented information on improving energy efficiency in ice arenas. Following that presentation, Todd Bissett — St. Cloud Municipal Athletic Complex (MAC) arena manager, asked for a follow-up visit.

The MAC has two arenas, one was

and effectiveness. The MAC staff felt that they could justify a chiller replacement with energy savings but did not think the floor could be replaced due to budget constraints.

Harris Companies met with the arena staff and conducted a preliminary review of the facility and found that the project, including the new floor, would be feasible. The final contract was approved by the City Council and signed in early June 2008. The new floor was installed and skating resumed in late September 2008, while the remainder of the project was completed in November 2008.

The MAC staff has a new arena floor in the Torrey Arena, a high efficiency TRAK International GeoExchange (ground source heat pump — GSHP) "chiller plant," a new Web-enabled and integrated building automation system (BAS) installed by Harris Controls, and improved system operation. The MAC team, the City of St. Cloud, and the citizens of St. Cloud now have a high-performance "green" arena that will reduce gas usage by 95% and electric usage by 30%. Nearly 4,000,000 gallons of water usage will be eliminated along with the yearly elimination of 300,000 pounds of greenhouse gases.

The first phase of the project involved the demolition of the Torrey arena floor, the chiller room, pumps and evaporative condenser.

### New rink floor

The new rink was designed using a state-of-the-art floor design that maximizes heat transfer to create a high quality skating surface, while using substantially less energy. The new floor utilizes a below-grade thermal storage buffer to create thermal storage capacity, sustain consistent glycol temperatures, and minimize the risk of ice loss related to a loss of cooling. The floor contains three circuits to provide only the amount of flow needed to maintain ice quality, saving cooling capacity and pump energy. The floor is constructed using high-density polyethylene pipe (HDPE) piping that was installed using fusion welding to create a seamless piping assembly that is resistant to leaks and friction loss. The floor contains more than 19 miles of 1" HDPE and more than 600' of 6" HDPE pipe. Added insulation under the thermal storage buffer, around the header and along the side boards prevent loss of capacity to the surrounding areas.

### GeoExchange ground source heat pump system

The heart of the new installation is the TRAK International GeoExchange Ground Source Heat Pump System.

heat pumps dedicated to the load loop, which provides 145°F hot water that is integrated into the existing hot water and domestic hot water systems.

The system was custom designed by TRAK to meet the needs of both ice rinks. The Ritsche Arena (1997) Vilter flooded chiller system was left in place, but tied into the new TRAK system so that it could remain as a back-up system and provide additional capacity if needed during peak load conditions. During construction of the project, the new Torrey Arena floor was initially cooled using the Ritsche Arena Vilter Chiller System.

The TRAK heat pumps were custom built by Midwest Fabrication and Supply of Zumbrota, Minn., for this application. The heat pumps are high efficiency industrial grade heat pumps that are designed for the specific facility where they will be installed. They include on-board direct digital controls and electronic expansion valves.

The well-field was installed under the existing parking lot and consists of more than 6500' of vertical boreholes.

The circulating pumps were installed with variable frequency drives to allow reduced flow through the circulating loops. A fluid cooler was added to the system to allow for additional heat



Piping connects to the heart of the GeoExchange system.

The system has four 60-ton heat pumps dedicated to the Source Loop providing 12-15 degree chilled glycol for the arena floors and two 60-ton

rejection and free cooling during cold winter months when it is possible to circulate chilled glycol through the (Turn to GeoExchange, page 71.)

## Estimates: should contractors charge for them?

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that time another 30 minutes for speaking with the consumer at the potential job location, minimally one hour of the contractor's time per estimate is spent by the contractor (including his/her associated costs) and gone forever.

If a contractor wants to put in a 40-hour workweek so that he/she can work to live rather than live to work, he/she will only have a maximum of 35 hours to perform free estimates and/or paying jobs. A one-person business will have less because that person also must perform administrative business duties.

In the contracting business, the overhead expense for a person in a vehicle for each of those hours is minimally \$75.00 without that person's salary. On that basis, 10, one-hour estimates minimally give a contractor \$750.00 in overhead cost. In a year, the contractor who only does estimates for his company could accrue over \$128,000.00 in overhead expenses.

With regard to the 10 contractors I called, seven didn't, and couldn't, get the job. If they had the intelligence, courage and confidence to tell me that they would charge me a \$75.00 fee for the estimate, they could have recovered the expenses they imposed upon themselves by offering free estimates. And they would have placed me in a position to make a decision. I could choose to pay for my window shopping and/or do less window shopping. Regarding my decision to buy, I could choose to "excrete or remove myself from the commode." Either choice would cost all 10 contractors less money.

When contractors charge a fee for their estimates, consumers would not be so willing to call every contractor under the sun. This would, in turn, lower the competition of every contractor for any project, while it

increased the contractor's opportunities to get each job. The point I am making is that there is no such thing as free estimates. If contractors don't charge consumers for the costs they incur to deliver their expert opinions and valuable ideas, consumers will keep window shopping at the contractors' expense.

### The question

Should contractors charge for estimates? Many do. But many contractors see this as a dilemma. They are fearful that if they charge for estimates they will lose work. But that's not a certainty. However, if they don't charge, they surely will lose money. If they never try to charge, they'll never know if it's possible. And if they persist in giving (not-so-free) free estimates, they shoot themselves in the foot by placing themselves in a competitive arena of fools.

Giving prices over the phone is no less detrimental. If they don't give the lowest phone price, they probably won't get an opportunity to land the job. But giving prices for a service when they haven't seen the conditions of the potential job could be fraught with financial peril. If they do give the lowest phone price and try to increase it after they see the circumstances regarding the job, they may tick the consumer off and not get the job anyway. In which case, they would still minimally have the cost of traveling, inspecting and estimating.

Should contractors charge for estimates? That's not the question that can solve the quandary. How do you charge consumers for their window shopping? That's the question!

### The answer

First, you must develop a higher testosterone level than the frightened dopes that really don't belong in the contracting business because they are the people who create and/or support

stupid business practices such as "free estimates." There is not one of them who wouldn't rather charge a fee for their estimating service. They are just too ignorant, fearful and stupid to do it.

Next: 1) correctly calculate your costs per hour; 2) determine your average travel time to the consumer to inspect potential jobs inclusive of the time you spend performing the inspection; 3) multiply your hourly cost by your average travel time to perform the estimate/inspection; and 4) minimally charge the consumer that amount so the consumer pays the cost you incur for their window shopping consumption.

I call this a service call charge. Done properly, you will discover that this is the smart way to handle estimates. It gives you the opportunity to recover the costs you incur through consumer window shopping. After trying it and realizing you can recover those costs associated with estimates, your testosterone level will rise. Then, you will have the opportunity to muster the courage and confidence to charge more than it cost you so you can make a profit above your cost of those estimates.

If the consumer gives you the job at that visit, you can apply the service call charge to the job. In calculating the price you quote for the task you must always include all travel times including the travel time for the estimate. After all, it's a cost that is only incurred because of that consumer's window shopping. Therefore, it should be charged to that consumer.

By applying the service call charge to the job, you have given the consumer an opportunistic financial benefit. They will envision the fact the service call charge will pay in part for the service you perform for them if they choose to use your business.

That's a win-win situation. If you don't get job, you minimally recover

your costs. If you do get the job, the consumer pays for the price of the job not the service call charge.

Before deciding whether or not to charge a fee for estimates, look in the mirror and pose the following question to yourself. "Would I like to charge consumers a fee to recover the cost of my resources that are spent on consumer window shopping?" Think about it before answering.

If your answer is no, then keep wallowing in your own self-inflicted misery. I believe all of you would rather get paid. It's the only thing that makes smart financial sense (and cents). And I know the only thing stopping you is fear. I can show you how to do it. That would take care of the factors associated with ignorance. But you have to have the courage to face your fears and suppress foolish tendencies. You hold your future in your own hands. You are the only person who can decide to keep doing the wrong thing and stop yourself from succeeding, or start yourself down the road to success, less stress and more financial security.

If you need help with any of my contracting business theories and methods, give me a call at 845/639-5050.

As always, I wish you good health and much prosperity. ■

Richard P. DiToma is a business consultant and contractor with 36 years of experience in the PHC industry. He conducts seminars, evaluates business operations, publishes customized price guides for contractors and offers continuing support.

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- ∞ CUSTOMIZED PRICE GUIDES

contact Richard:

Call: 845-639-5050

Fax: 845-639-6791

E-mail: [richardditoma@verizon.net](mailto:richardditoma@verizon.net)

Mail: R & G Profit-Ability, Inc

P.O. Box 282, West Nyack, NY 10994

## GeoExchange

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fluid cooler and eliminate the need for mechanical cooling.

The existing dehumidification unit for Torrey Arena was retrofitted in the field to convert the existing refrigerant and hot water coils to chilled water and hot water coils. In addition, a new high efficiency motor and variable frequency drive were installed. The unit uses excess cooling from the rink floor supply and waste heat to efficiently maintain rink humidity levels.

The Ritsche Arena used a Fresh Air

Systems (FAS) dehumidification unit that contained a desiccant wheel that was recharged by heat generated from a 750,000 Btu natural gas hot water boiler in the unit. The hot loop piping was extended to this unit in order to use waste heat generated from maintaining the ice to recharge the desiccant wheel.

A heat recovery air handling unit for the Torrey Arena that had used hot refrigerant gas from the chiller was converted to use hot water that is heated with waste heat from the TRAK heat pump plant.

### Building automation system

The Torrey Arena was built in 1972

with pneumatic controls for the temperature control system. Several years ago, the pneumatic control system was abandoned and replaced with stand-alone electric controls. Most of the valves and actuators were retrofitted in some way, but several were left without any control and remained that way until this project was completed. Ritsche Arena was built in 1997 and used electro-mechanical controls for the Vilter Chiller plant and KMC Controls Direct Digital Controls (DDC) for the arena temperature control.

This project replaces all of the stand-alone controls in the Torrey Arena, integrates both the existing

KMC Controls in the Ritsche Arena, and the new KMC Controls for the TRAK heat pump plant and Vilter Plant into one system. The project also included the addition of CO<sub>2</sub> sensors for the Torrey Arena make-up air units so that they only operate & ventilate when the building occupancy requires additional outdoor air.

The BAS uses a Web-enabled graphical user interface to allow the arena staff to monitor the system, adjust schedules and operate the building from anywhere internet access is available. The BAS includes energy management functions to monitor and control the arenas energy use in the facility. ■